

FIGURE 1A

HMEAA94

-50 -30 -10
GGAGGTGGTGGCGACTCCCTCGCTCGCCCTCACTGCCGGCGGTCCCAACTCCAGGCACC
10 30 50
ATGTTCCCCCGGGCCCCCCCCAGCCACAGCCTCCTCCGGCTCCCCCTGCTGCAGTTGCTG
M F P A G P P S H S L L R L P L L O L L
70 90 110
CTACTGGTGGTGCAGGCCGTGGGGAGGGGGCTGGGCCGCGCCAGCCCGGCCGGGGGGCCCC
L L V V O A V G R G L G R A S P A G G P
130 150 170
CTGGAAGATGTGGTCATCGAGAGGTACCACATCCCCAGGGCCTGTCCCCGGGAAGTGCAG
L E D V V I E R Y H I P R A C P R E V Q
190 210 230
ATGGGGGATTTTGTGCGCTACCACTACAACGGCACTTTTGAAGATGGCAAGAAGTTTGAT
M G D F V R Y H Y N G T F E D G K K F D
250 270 290
TCAAGCTATGATCGCAACACCTTGGTGGCCATCGTGGTGGGTGTGGGGCGCCTCATCACT
S S Y D R N T L V A I V V G V G R L I T
310 330 350
GGCATGGACCGAGGCCCTCATGGGCATGTGTGTCAACGAGCGGCGACGCCTCATTGTGCCT
G M D R G L M G M C V N E R R R L I V P
370 390 410
CCCCACCTGGGCTATGGGAGCATCGGCCTGGCGGGGCTCATTCCACCGGATGCCACCCCTC
P H L G Y G S I G L A G L I P P D A T L
430 450 470
TACTTCGATGTGGTTCTGCTGGATGTGTGGAACAAGGAAGACACCGTGCAGGTGAGCACA
Y F D V V L L D V W N K E D T V Q V S T
490 510 530
TTGCTGCGCCCCGCCCCACTGCCCCCGCATGGTCCAGGACGGCGACTTTGTCCGCTACCAC
L L R P P H C P R M V Q D G D F V R Y H
550 570 590
TACAATGGCACCCCTGCTGGACGGCACCTCCTTCGACACCAGCTACAGTAAGGGCGGCACT
Y N G T L L D G T S F D T S Y S K G G T
610 630 650
TATGACACCTACGTCGGCTCTGGTTGGCTGATCAAGGGCATGGACCAGGGGCTGCTGGGC
Y D T Y V G S G W L I K G M D Q G L L G
670 690 710
ATGTGTCCTGGACAGAGAAGGAAGATTATCATCCCTCCATTCCTGGCCTATGGCGAGAAA
M C P Q R R K I I P P F L A Y G E K
730 750 770
GGCTATGCTGAGGGTGGGCAAGGACACAAGGGGAAATTCCGCAGAAGAGGGAAAAACCAG
G Y G E G G Q G H K G K F R R R G K N Q

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FIGURE 1B

790 810 830
GCCTCCACATACAGTTGCTCAGGTTGTATACTGCACGAGGGCATCCAACCAAGGACTCAA
A S T Y S C S G C I L H E G I Q P R T Q
850 870 890
GGTGGGATGAAATCTACCCTTGGTGCTACTAAGAAGGGGTGCTTTGGCCGGGCGTGCTGG
G G M K S T L G A T K K G C F G R A W W
910 930 950
CTCAGCCTTGTAATCCCAGCACTTTGGGAAGCCAAGGCGGGAGGATCACGAGGTCCAGGA
L T L V I P A L W E A K A G G S R G P G
970 990 1010
GATCGAGACCACGGTGAAACCCCGTCTCTACTAAAAATACAAAAAATTAGCCGGGCGTG
D R D H G E T P S L L K I Q K N *
1030 1050 1070
GTGGGGGCGCCTGTAGTCCCAGCTACTCGGAGAGGCTGAGGCAGGAAAATGACGTGAACC
1090 1110 1130
CGGGAGGCGGAGCTTGCAGTGAGCCGAGATCTTGCCACTGCACTCCAGCCTGGGTGACAG
1150 1170
AGCGAGACTCTGTCTCAAAAAAAAAAAAAAAAAA

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FIGURE 2A

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      10              30              50
CTTCGATGTGGTTCTGCTGGATGTGTGGAACAAGGAAGACACCGTGCAGGTGAGCACATT
  F D V V L L D V W N K E D T V Q V S T L
      70              90             110
GCTGCGCCCGCCCCACTGCCCGCATGGTCCAGGACGGCGACTTTGTCCGCTACCACTA
  L R P P H C P R M V Q D G D F V R Y H Y
      130             150             170
CAATGGCACCCCTGCTGGACGGCACCTCCTTCGACACCAGCTACAGTAAGGGCGGCACTTA
  N G T L L D G T S F D T S Y S K G G T Y
      190             210             230
TGACACCTACGTCGGCTCTGGTTGGCTGATCAAGGGCATGGACCAGGGGCTGCTGGGCAT
  D T Y V G S G W L I K G M D Q G L L G M
      250             270             290
GTGTCCTGGAGAGAGAAGGAAGATTATCATCCCTCCATTCTGGCCTATGGCGAGAAAGG
  C P G E R R K I I I P P F L A Y G E K G
      310             330             350
CTATGGGACAGTGATCCCCCACAGGCCTCGCTGGTCTTTCACGTCCTCCTGATTGACGT
  Y G T V I P P Q A S L V F H V L L I D V
      370             390             410
GCACAACCCGAAGGACGCTGTCCAGCTAGAGACGCTGGAGCTCCCCCGGGCTGTGTCCG
  H N P K D A V Q L E T L E L P P G C V R
      430             450             470
CAGAGCCGAGGGCCGGGGACTTCATGCGCTACCACTACAATGGCTCCTTGATGGACGGCAC
  R A G A G D F M R Y H Y N G S L M D G T
      490             510             530
CCTCTTCGATTCCAGCTACTCCCACAACCACACCTACAATACCTATATCGGGCAGGGTTA
  L F P S S Y S H N H T Y N T Y I G Q G Y
      550             570             590
CATCATCCCCGGGATGGACAGGGGCTGCAGGGTGCCTGCATGGGGGAACGCCGGAGAAT
  I I P G M D Q G L Q G A C M G E R R R I
      610             630             650
TACCATCCCCCGCACCTCGCCTATGGGGAGAATGGAAGTGGAGACAAGATCCCTGGCTC
  T I P P H L A Y G E N G T G D K I P G S
      670             690             710
TGCCGTGCTAATCTTCAACGTCCATGTCATTGACTTCCACAACCCTGCGGATGTGGTGA
  A V L I F N V H V I D F H N P A D V V E
      730             750             770
AATCAGGACACTGTCCCGGCCATCTGAGACCTGCAATGAGACCACCAAGCTTGGGGACTT
  I R T L S R P S E T C N E T T K L G D F

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FIGURE 2B

790 810 830
 TGTTCGATAACCATTACAACCTGTTCTTTGCTGGACGGCACCCAGCTGTTTCACCTCGCATGA
 V R Y H Y N C S L L D G T Q L F T S H D
 850 870 890
 CTACGGGGCCCCCAGGAGGCGACTCTCGGGGCCAACAAGGTGATCGAAGGCCTGGACAC
 Y G A P Q E A T L G A N K V I E G L D T
 910 930 950
 GGGCCTGCAGGGCATGTGTGTGGGAGAGAGGCGGCAGCTCATCGTGCCCCCGCACCTGGC
 G L Q G M C V G E R R Q L I V P P H L A
 970 990 1010
 CCACGGGGAGAGTGGAGCCCCGGGGAGTCCCAGGCAGTCTGTGCTGCTGTTTGAAGGTGA
 H G E S G A R G V P G S A V L L F E V E
 1030 1050 1070
 GCTGGTGTCCCGGGAGGATGGGCTGCCCCACAGGCTACCTGTTTGTGTGGCACAAGGACCC
 L V S R E D G L P T G Y L F V W H K D P
 1090 1110 1130
 TCCTGCCAACCTGTTTGAAGACATAGACCTCAACAAGGATGGCGAGGTCCCTCCGGAGGA
 P A N L F E D I D L N K D G E V P P E E
 1150 1170 1190
 GTTCTCCACCTTCATCAAGGCTCAAGTGACTGAGGGCAAAGGACGCCTCATGCCTGGGCA
 F S T F I K A Q V S E G K G R L M P G Q
 1210 1230 1250
 GGACCCTGAGAAAACCATAGGAGACATGTTCCAGAACCAGGACCGCAACCAGGACGGCAA
 D P E K T I G D M F Q N Q D R N Q D G K
 1270 1290 1310
 GATCACAGTCGACGAGCTCAAGCTGAAGTCAGATGAGGACGAGGAGCGGGTCCACGAGGA
 I T V D E L K L K S D E D E E R V H E E
 1330 1350 1370
 GCTCTGAGGGGCAGGGAGCCTGGCCAGGCCTGAGACACAGAGGCCCCACTGCGAGGGGGAC
 L *
 1390 1410 1430
 AGTGGCGGTGGGACTGACCTGCTGACAGTCACCCTCCCTCTGCTGGGATGAGGTCCAGGA
 1450 1470 1490
 GCCAACTAAAACAATGGCAGAGGAGACATCTCTGGTGTTCACCACCCTAGATGAAAAT
 1510 1530 1550
 CCACAGCACAGACCTCTACCGTGTCTCTTCCATCCCTAAACCACTTCCTTAAAATGTT
 1570 1590 1610
 TGGATTTGCAAAGCCAATTGGGGCCTGTGGAGCCTGGGGTTGGATAGGGCCATGGCTGG
 1630 1650 1670
 TCCCCCAACATACCTCCCCCTCCACATCACTGACACAGCTGAGCTTGTATCCATCTCCCC
 1690 1710 1730
 AAACTTCTCTTTCTTTGTACTTCTTGTTCATCCCCACTCCCAGCCCCATTCCTCTATGT

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FIGURE 2C

1750 1770 1790
GACAGCTGGCTAGGACCCCTCTGCCTTCCTCCCCAATCCTGACTGGCTCCTAGGGAAGGG
1810 1830 1850
GAAGGCTCCTGGAGGGCAGCCCTACCTCTCCCATGCCCTTTGCCCTCCTCCCTCGCCTCC
1870 1890 1910
AGTGGAGGCTGAGCTGACCCCTGGGCTGCTGGAGGCCAGACTGGGCTGTAGTTAGCTTTTC
1930 1950 1970
ATCCCTAAGAAGGCTTCCCTAAGGAACCATAGAAGAGAGGAAGAAAACAAAGGGCATG
1990 2010 2030
TGTGAGGGAAGCTGCTTGGGTGGGTGTTAGGGCTATGAAATCTTGGATTGGGGCTGAGG
2050 2070 2090
GGTGGGAGGGAGGGCAGAGCTCTGCACACTCAAAGGCTAAACTGGTGTCACTCCTTTTTT
2110 2130
CCTTTGTTCCAAATAAAAGATTAAACCAAAAAAAAAAAAAAAAAAAAA

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FIGURE 3A

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GCGTCCGCGGCTGCAGCCCGGGTAGGGCCAGGAGACCCGGTCCACGTTTGCAAACGCAGC
CGAACGCCCAGGCCGACCCGTGCCGCCCAGCGCCGCGCTGCGTCCGCGCCACTCTTCTC

M A F R G W R P P P P P L L L L L
GCCGCCCCGATGGCGTTCCGGGGCTGGAGGCCCCCGCCGCCACCGCTGCTCCTGCTGCTG

L W V T G O A A P V A G L G S D A E L Q
CTCTGGGTGACCGGGCAGGCAGCGCCCGTGGCGGGCCCTGGGCTCCGACGCGGAGCTGCAG

I E R R F V P D E C P R T V R S G D F V
ATCGAGCGGCGCTTCGTGCCCGACGAGTGCCCGCGCACCGTGCAGCGGCGACTTCGTG

R Y H Y V G T F P D G Q K F D S S Y D R
CGCTACCACTACGTGGGGACGTTCCCCGACGGCCAGAAGTTCGACTCCAGCTATGACAGA

D S T F N V F V G K G Q L I T G M D Q A
GACTCCACTTTCAATGTGTTTGTGGGAAAAGGACAGCTGATCACAGGGATGGACCAGGCT

L V G M C V N E R R F V K I P P K L A Y
CTTGTTGGGATGTGCGTAAACGAGAGACGTTTCGTGAAGATTCCCCCAAAGCTTGCTTAC

G N E R V S G V I P P N S V L H F D V L
GGAAATGAAAGAGTTTCTGGTGTGATCCCCCCCCAATTCAGTGCTTCATTTTGATGTACTT

L M D I W N S E D Q V Q I H T Y F K P P
CTGATGGATATTTGGAATTCTGAAGACCAGGTTTCAGATTCACACCTATTTCAAGCCCCCG

S C P R T I Q V S D F V R Y H Y N G T F
AGTTGCCCTCGGACCATCCAGGTGTCTGATTTTGTGAGGTACCACTACAACGGGACGTTT

L D G T L F D S S H N R M K T Y D T Y V
CTGGACGGAACCTCTGTTTGATTTCGAGTCACAATCGCATGAAAACATATGACACGTATGTG

G I G W L I P G M D K G L L G M C V G E
GGAATTGGCTGGCTGATTCTGGAATGGATAAAGGGCTGCTGGGGATGTGTGTGGGTGAG

K R I I T I P P F L A Y G E D G D G K D
AAGCGCATCATCACCATTCTCTCTTTTCTGGCCTATGGAGAGGATGGAGATGGGAAAGAC

I P G Q A S L V F D V A L L D L H N P K
ATTCCCGGTTCAGGCATCTCTGGTGTGTTGATGTTGCATTATTGGACCTCCATAACCCCAAG

D S I S I E N K V V P E N C E R I S Q S
GACAGCATTTCCATTGAGAACAAGGTAGTACCTGAAAACCTGTGAGCGGATAAGTCAAAGT

G D F L T Y H Y N G T L L D G T L F D S
GGGGACTTTCTCACGTATCATTACAATGGCACGCTTCTGGATGGCACCCCTCTTTGATTCC

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FIGURE 3B

S Y S R N R T F D T Y I G Q G Y V I P G
 AGCTACTCTCGGAACCGCACGTTTGACACGTACATTGGGCAGGGCTACGTGATTCTCTGGG

 M D E G L L G V C I G E K R X I V V P P
 ATGGATGAAGGTCTACTTGGTGTGTTGCATTGGAGAAAAGCGAANGATTGTGGTCCCCGCCT

 H L G Y G E E G R G N I P G S A V L V F
 CACCTGGGGTATGGAGAGGAAGGAAGAGGGAATATCCCCGGCTCGGCTGTGCTGGTGTGTT

 D I H V I D F H N P S D S I S I T S H Y
 GACATCCATGTGATCGACTTCCACAACCCTTCGGACTCCATCAGCATCACCTCCCACCTAC

 K P P D C S V L S K K G D Y L K Y H Y N
 AAACCCCTGACTGCTCAGTGCTGAGTAAGAAGGGAGATTACCTCAAATATCACTACAAT

 A S L L D G T L L D S T W N L G K T Y N
 GCCTCACTTCTGGATGGGACCCTGCTGGACTCCACGTGGAATTTAGGCAAACTTACAAT

 I V L G S G Q V V L G M D M G L R E M C
 ATTGTTCTGGGATCTGGGCAAGTTGTGTTGGGGATGGACATGGGTCTCAGAGAGATGTGC

 V G E K R T V I I P P H L G Y G E A G V
 GTTGGCGAGAAACGGACAGTGATCATTCCGCCTCACCTGGGCTATGGGGAAGCTGGCGTG

 D G E V P G S A V L V F D I E L L E L V
 GATGGAGAAGTGCCCGGCAGTGCCGTATTAGTGTTTGACATTGAGCTSCTGGAGCTGGTG

 A G L P E G Y M F I W N G E V S P N L F
 GCTGGCCTTCTTGAGGGGTACATGTTTCATATGGAATGGTGAGGTGTCACCCAACCTCTTT

 E E I D K D G N G E V L L E E F S E Y I
 GAAGAAATTGACAAGGATGGCAACGGAGAAGTCCTCCTGGAAGAGTTCTCAGAGTACATT

 H A Q V A S G K G K L A P G F D A E L I
 CACGCCCAGGTGGCATCTGGCAAAGGGAACTCGCTCCTGGCTTTGATGCTGAGCTGATT

 V K N M F T N Q D R N G D G K V T A E E
 GTGAAGAATATGTTACCAACCAGGACCGGAATGGAGATGGGAAGGTCACAGCCGAGGAA

 F K L X D Q E A K H D V T L N L A *
 TTTAAACTCARAGACCAGGAAGCCAAACACGATGTAACCTCTAAACCTGGCATGAACCAGA

 TGGTGCCAGGGGAGTACGTGACACCAAGCCACCTGTGTGGMAAGACGTGCARTTGARGGT
 GCAAGGGGTCTCTCAGAAAGTTTGATCCATTAGCCAGTAGTAGGTGGGGTCACATAGTAC
 CTGGTGTACACATCGGGGTGGGTTGATATATGGGGTGAGAAGTTTGGGCTGATCGCCAGT
 GATAGTAAACAAAATCTGTGNCAGAGGGCCCTTAGCATGGGATGTGTCCAGTATTCGACCC
 ACGCGTCCGCNTGCCAACCATGATTTGTGAGCCTTCTGGGAAATTTTGTTATTAAAGGAA
 TATATAGTGTCNAGACGGAAGTTATAATCATCTTGGAGGAACCATAAGAAAAGGTGTCCA
 GGGTATCTATATAAAGAGGGTTAAATTTTTTTTAACTTGCTGGTTAAACATTTTAGAA
 ATATTCTAGAGATGGGCAGGAGAGTCAAAGGGCTTGCTTGCCCCAGCAGAGTCCCAGCA
 GACAGCCATGGATATTCCCAGCAGCCTGTGCAAATCTGATGATGGCCCCACCCCGCAC
 ACGGCACACGNCACATCAWGCTTTTCCAGCTCATCACACCCCGCCCCANTNNGGGCCTAC
 CATTAATAGNGTATNANTTGGAGGNTAAAAGAGCCTTTTGGACAGAAAACCTGGGCCAGGN
 AAAGGCATNTCAGACCACAAATAGAGAATTTGATTTCGTCAATTTGCCACANAAGTCATCTG

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FIGURE 3C

NTTAGCTTNTCCTTTTCCTTNANANANATTTNANTTTTTCTGGAGGCAGAGTCTCCCTTT
GTCGCCAGGCTGGAGTGCAGTGGTGCCATCTCGGCTCACTGCAGCACTGTCTCGGCTCAC
TGCAGCKTCCGCCTCCCGTATTCAAGCGATTCTCCTGTCTCAGCCTCCTGAGTAGCTGGG
ASTACAGGTGTGCACCACCACGCCCCGGCTAATTTTTGTATTTTAGTAGAGACGGGGTTT
CACTGTGTTGGCCAGGATGGTCTCAATCTCGACTTCGTGATCCGCCCACCTTGGCCTCCC
AAAGTGTTGGGATTACAGGCGTGACTCACCATGCCAGCCACTTAGTTTTTCTTATTCC
CACCTTTCTATCCCATAGAACATCTTTTTTATCTTCCCTGAACCATATWGATGAGATAAA
TAGGGCTGGGGMTGGGCCCCGCTGGTCACTCAACAGAGTATTTCCCTTGGCCGAGATGG
AAGTTTTGTCCAATAGATGAGCTGCTGAGTATCAACAAGGTGACATTTTCTGCTGCCC
ATTTGTGTCCTGGAGACGGTGGTACCCTGAAGGCAGAGGCCAGTGCCGCAAGACAGCAAT
GACAGTCCACCTGCCGACCTGATTCCTGCATCATGGAATAACCACATGGCTACCTTCTAT
CCTCTGTTCCCAAATGGTGGTGGCACTTATCCTGAAGTCGTCAATGACTTCCCTTTGAAA
CTACTTTATTTTACTAATTTAAACTATTTTGTACTGATGTAGCCCTGAGGTAGTTCATGA
AAATGCTGTGCACTCATTCCATGGAATAAATGTTGGAAGCTCATCTTTTCTGATATAAA
ATGTTGAATGATAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

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FIGURE 4A

HFKBC47

10 30 50
ACACGTATGGGGAAATTTGGCTGGCTGATTCCCTGGAATGGATAAAGGGCTGCTGGGGATGT
T Y E I G W L I P G M D K G L L G M C
70 90 110
GTGTGGGTGAGAAGCGCATCATCACCATTCCCTTTCTGGCCTATGGAGAGGATGGAG
V G E K R I I T I P P F L A Y G E D G D
130 150 170
ATGGGAAAGACATTCCCGGTCAGGCATCTCTGGTGTGTTGATGTTGCATTATTGGACCTCC
G K D I P G Q A S L V F D V A L L D L H
190 210 230
ATAACCCCAAGGACAGCATTTCATTGAGAACAAGGTAGTACCTGAAAACCTGTGAGCGGA
N P K D S I S I E N K V V P E N C E R I
250 270 290
TAAGTCAAAGTGGGGACTTTCTCAGGTATCATTACAATGGCACGCTTCTGGATGGCACCC
S Q S G D F L R Y H Y N G T L L D G T L
310 330 350
TCTTTGATTCCAGCTACTCTCGGAACCGCACGTTTGACACGTACATTGGGCAGGGCTACG
F D S S Y S R N R T F D T Y I G Q G Y V
370 390 410
TGATTCCCTGGGATGGATGAAGGTCTACTTGGTGTGTTGCATTGGAGAAAAGCGAAGGATTG
I P G M D E G L L G V C I G E K R R I V
430 450 470
TGGTCCCGCCTCACCTGGGGTATGGAGAGGAAGGAAGAGGGAATATCCCCGGCTCGGCTG
V P P H L G Y G E E G R G N I P G S A V
490 510 530
TGCTGGTGTGTTGACATCCATGTGATCGACTTCCACAACCCCTTCGGACTCCATCAGCATCA
L V F D I H V I D F H N P S D S I S I T
550 570 590
CCTCCCCTACAAACCCCTGACTGCTCAGTGTGAGTAAGAAGGGAGATTACCTCAAAT
S H Y K P P D C S V L S K K G D Y L K Y
610 630 650
ATCACTACAATGCCTCACTTCTGGATGGGACCCTGCTGGACTCCACGTGGAATTTAGGCA
H Y N A S L L D G T L L D S T W N L G K
670 690 710
AACTTACAAATATTGTTCTGGGATCTGGGCAAGTTGTGTTGGGGATGGACATGGGTCTCA
T Y N I V L G S G Q V V L G M D M G L R
730 750 770
GAGAGATGTCGTTGGCGAGAAACGGACAGTGATCATTCCGCCTCACCTGGGCTATGGGG
E M V G E K R T V I I P P H L G Y G E

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FIGURE 4B

790 810 830
AAGCTGGCGTGGATGGAGAAGTGCCCGGCAGTGCCGTATTAGTGTGTTGACATTGAGCTGC
A G V D G E V P G S A V L V F D I E L L
850 870 890
TGGAGCTGGTGGCTGGCCTTCCTGAGGGGTACATGTTTCATATGGAATGGTGAGGTGTCAC
E L V A G L P E G Y M F I W N G E V S P
910 930 950
CCAACCTCTTTGAAGAAATCAACAAGGTGACATTTTTCTGCTGCCCATTTGTGTCTCTGGA
N L F E E I N K V T F F C C P F V S W R
970 990 1010
GACGGTGGTACCCCTGAAGGCAGAGGCCAGCTGCCGCAAGACAGCAATGACAGTCCACCTG
R W Y P E G R G Q L P Q D S N D S P P A
1030 1050 1070
CCGACCTGATTCTGTCATCATGGAATAACCACATGGCTACCTTCTATCCTCTGTTCCCAA
D L I P A S W N N H M A T F Y P L F P N
1090 1110 1130
ATGGTGGTGGCACTTATCCTGAAGTCGTCAATGATTTCCTTTGAAACTACTTTATTTTA
G G G T Y P E V V N D F P L K L L Y F T
1150 1170 1190
CTAATTTAAACTATTTTGTACTGATGTAGCCCTGAGGTAGTTCATGAAAAATGCTGTGCA
N L N Y F V L M *
1210 1230 1250
CTCATTCCATGGGAATAAATGTTGGGAAAGCTGAAAAAAAAAAAAAAAAAAAAA

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